APRIL/MAY 2025

23PCS11 — ANALYSIS AND DESIGN OF ALGORITHMS

Time : Three hours Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL the questions.

1. Define the term – Algorithm.
2. What is Binary tree?
3. Define the term – Divide-and-Conquer technique.
4. What is Merge sort?
5. What is Greedy method?
6. Define the term – Spanning tree.
7. What is Optimal Binary search tree?
8. What is Flow shop scheduling?
9. What is Graph coloring?
10. What is Branch-and-Bound technique?

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SECTION B — (5 × 5 = 25 marks)

Answer ALL the questions.

11. (a) Discuss on the organization of Stacks and Queues.

Or

(b) Describe the different types of Graph representations.

12. (a) Explain briefly the Binary Tree traversal techniques.

Or

(b) Discuss on the Binary search method using a numerical example.

13. (a) Describe the working of Kruskal's algorithm.

Or

(b) Explain briefly the algorithm for Knapsack problem.

14. (a) Discuss on the algorithm for all pairs Shortest paths.

Or

(b) Describe about the Traveling Salesperson problem in Backtracking.

15. (a) Explain the algorithm for Sum of Subsets problem.

Or

(b) Discuss on Hamiltonian cycles with examples.

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SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Explain the fundamentals of Space and Time Complexity of Algorithms.

17. Describe the Graph Traversal techniques with an example.

18. Discuss on the working of Single source Shortest path algorithm using an example.

19. Explain the functioning of Multistage graphs in detail.

20. Describe the algorithm for 8-Queens problem.

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